

# TWO NEW GENERA OF THE SUBFAMILY PENTATOMINAE (HETEROPTERA: PENTATOMIDAE) FROM THE AUSTRALIAN REGION<sup>1</sup>

by

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## ABSTRACT

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Two new genera, *Grossiana* and *Knighitiella*, are described to accommodate *Strachia persignata* Walker and *Stenozygum flavifrons* Distant known from Queensland and New Caledonia respectively. The above species are redescribed, the characters of their metathoracic scent gland ostioles and male and female genitalia are described for the first time and their position in the subfamily Pentatominae is briefly discussed.

## INTRODUCTION

*Strachia persignata* Walker, 1867 and *Stenozygum flavifrons* Distant, 1914 were described from Queensland and New Caledonia respectively in the Australian region. During a revision of *Stenozygum* Fieber, 1861 from the Oriental and Australian regions by the present authors the above species were compared with the type-species of the genus and with all the Oriental and Australian species described under the genera *Strachia* Hahn, 1833 and *Stenozygum* and were found to be very different, especially in the characters of metathoracic scent gland ostioles and male and female genitalia. These two species are redescribed here with special reference to the above-mentioned characters and placed each in a new genus, *Grossiana* and *Knighitiella* respectively. Their position in the family is briefly discussed. For the dissection of male and female genitalia, for measurements and diagrams the conventional procedures, especially those of the present authors (in press) have generally been followed.

### Genus GROSSIANA New Genus

Body brilliantly patterned.

*Head:* Eyes stalked; basal antennal segments uniformly thick and slightly inwardly curved, distinctly passing beyond apex of head, labium reaching posterior coxae.

*Thorax:* Metathoracic scent gland ostioles without peritreme and with ill-defined evaporatoria.

*Male genitalia:* Pygophore with latero-posterior lobes distinct but not detached or marked from the rest of the pygophore; parameres simple, sickle-shaped; inflated aedeagus with vesica distinctly shorter than penial lobes and apically semi-sclerotized, dorsal membranous conjunctival appendage, and ventral conjunctival appendage fully membranous.

*Female genitalia:* Female terminalia with triangular visible in between 1st gonocoxae, with ends pointed and reaching to inner anterior margin of 1st gonocoxae, spermatheca without processes on spermathecal bulb.

*Comparative note:* *Grossiana* is somewhat closely related to *Strachia* in having the basal antennal segment long and surpassing apex of head and second antennal segment subequal to third, but it can easily be separated from all the species of that genus in having a simple unilobed pronotum as opposed to distinctly laterally bilobed in the species of *Strachia* and in other characters noted under "Systematic positions".

The genus is named in honour of Dr. G. F. Gross of South Australian Museum, Adelaide, Australia to acknowledge his work on Heteroptera.

*Type-species:* *Strachia persignata* Walker, 1867.

### *Grossiana persignata* (Walk.)

(Figs. 1-10)

*Strachia persignata* Walker, 1867, p. 347.

*Stenozygum persignatum* Distant, 1881, p. 213.

*Coloration:* Body shining black with prominent yellow markings (fig. 1), uniformly punctured except head and anterior portion of pronotum; ventrally yellow with a small black patch in the middle on either side along the margins of bucculae, a small black spot at the base of antenniferous tubercles on either inner side, broad black longitudinal lines on outer portion of pro-, meso-, and metapleuron, on either side, black punctures on the rest of pro-, meso-, and metapleuron, dark brown 2nd, 3rd and 4th segments of labium, a black transverse patch posterior to spiracles on 2nd-7th abdominal segments and a black transverse patch on outer portion along the lines between 2nd-7th abdominal segments on either side.

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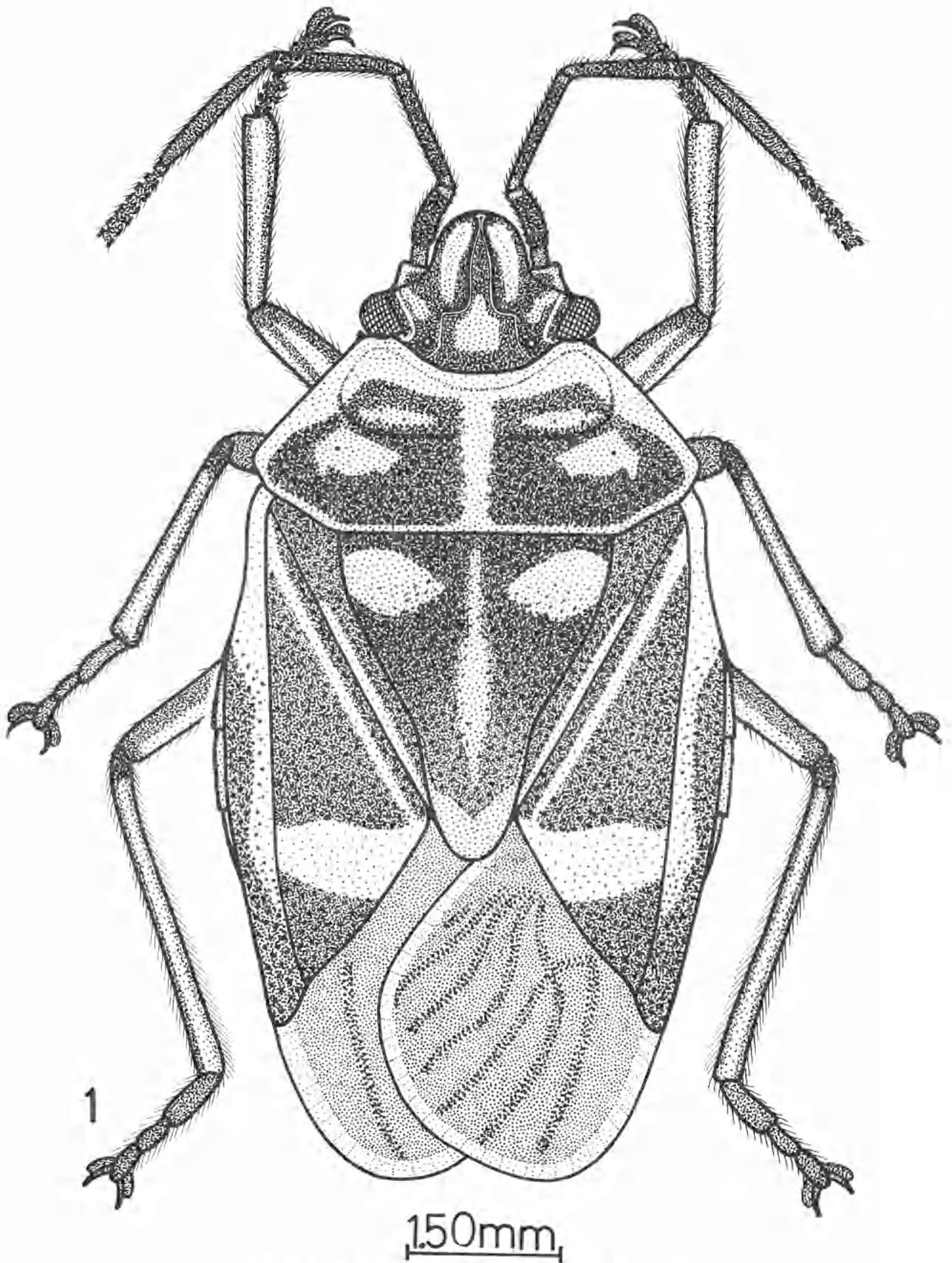


Fig. 1—*Grossiana persignata* (Walker) female, dorsal view.

**Head:** Antecular portion equal to the posterior portion of head including eyes, length of antecular portion 0.75 mm, length of posterior portion of head including eyes 0.75 mm (0.65-0.80 mm); width including eyes 2.30 mm (2.20-2.30 mm); interocular distance 1.1 mm; intercellular distance 0.80 mm (0.80-0.90 mm); paraclypei with tips slightly separated from each other, terminating above and subequal to clypeus, basal antennal segments well passing the apex of head, 3rd segments slightly longer than the 2nd antennal segments; length of segments I, 0.50 mm (0.50-0.55 mm), II, 1.10 mm (0.90-1.1 mm), III, 1.20 mm (1.10-1.20 mm), IV, 1.40 mm, V, mutilated, antennal formula  $1 < 2 < 3 < 4$ ; Labium reaching posterior coxae, 1st segment slightly extending beyond bucculae, latter not reaching to the base of head; length of segments I, 0.80 mm (0.70-0.80 mm), II, 0.95 mm (0.85-0.95 mm), III, 0.60 mm (0.55-0.66 mm), IV, 0.70 mm (0.65-0.70 mm), labial formula  $3 < 4 < 1 < 2$ .

**Thorax:** Pronotum 2.5x wider than long, length 1.70 mm (1.60-1.80 mm), width 4.30 mm (3.70-4.30 mm); scutellar length about  $1\frac{1}{4}$  x the length of pronotum, scutellar length 3.10 mm, width 2.70 mm (2.65-2.70 mm); metathoracic scent gland ostioles small elliptical, without peritreme and with ill-defined evaporatoria; distance from base of scutellum to apex of clavus 2.15 mm; apex of scutellum to apex of clavus 0.95 mm; apex of scutellum to apex of abdomen (including membrane) 3.10 mm (2.6-3.10 mm).

**Abdomen:** Anterior margin of 7th abdominal sternum acute in male and medially convex in female, posterior margin medially broadly concave in male and medially bilobed in female, connexiva slightly exposed at repose. Total length ♂ 7.60 mm, ♀ 9.40 mm (9.05-9.40 mm).

**Male genitalia:** Pygophore (figs. 2-4) nearly 2x wider than long, ventro-posterior margin medially concave with a pair of quadrate processes consisting of a group of hairs at their apices on either inner side adjacent to median concavity; proctiger sclerotized; parameres (figs. 5 and 6) with comparatively short straight stem and elongated tapering curved blade and spine-like inner process at junction of stem and blade; inflated aedeagus (figs. 7 and 8) with a more or less cuboidal theca, broader posteriorly than anteriorly and with minute lateral thecal appendages, conjunctiva along with vesica enclosed in a cup-shaped structure with a hexagonal ventral surface and more or less trapezoidal dorsal surface, dorsal membranous conjunctival appendage taperingly bilobed and semisclerotized apically, ventral membranous conjunctival appendage bilobed and shorter than dorsal membranous conjunctival appendage, penial lobes fused, enclosing a slightly longer vesica.

**Female genitalia:** (figs. 9 and 10) Posterior margin of triangulin slightly convex; exposed part of 1st gonocoxae 3x broader than long; 9th paratergites with apices truncate with apical angles distinctly touching the posterior margin of 8th paratergites; spermatheca (fig. 10) with spermathecal median dilation divided into a posterior large and anterior small pouch by a constriction, spermatheca with distal duct slightly dilated, bulb without processes.

**Material examined:** Holotype, Australia, "Strachia persignata (Walker)" "57-130" "96" in British Museum (Natural History) London; 1 ♂, 2 ♀ Australia: Queensland, Rockhampton; 1 ♂ Australia: Brisbane, Queensland Mus. R. Hamlin Harris 1914-202; "64"; 1 ♂ Australia: Goodna, 10-11-24, R. Baeker "163" "Australia, British Museum, 1926-241" "Australia: Peak Downs", Distant Coll. 1911-383"; 2 ♂, 2 ♀ Australia, in B.M.(N.H.); 1 ♂, 2 ♀, Australia, Queensland: Bundaberg, Gayndah, Rockhampton, A.M. Lea det. A. Musgrave in South Australian Museum, Adelaide; Australia.

#### Genus KNIGHTIELLA New Genus

Body predominantly green and less brilliantly patterned than other genera of Strachini.

**Head:** Eyes sessile; basal antennal segments uniformly slender, straight, distinctly surpassing apex of head; labium reaching to 4th abdominal segment.

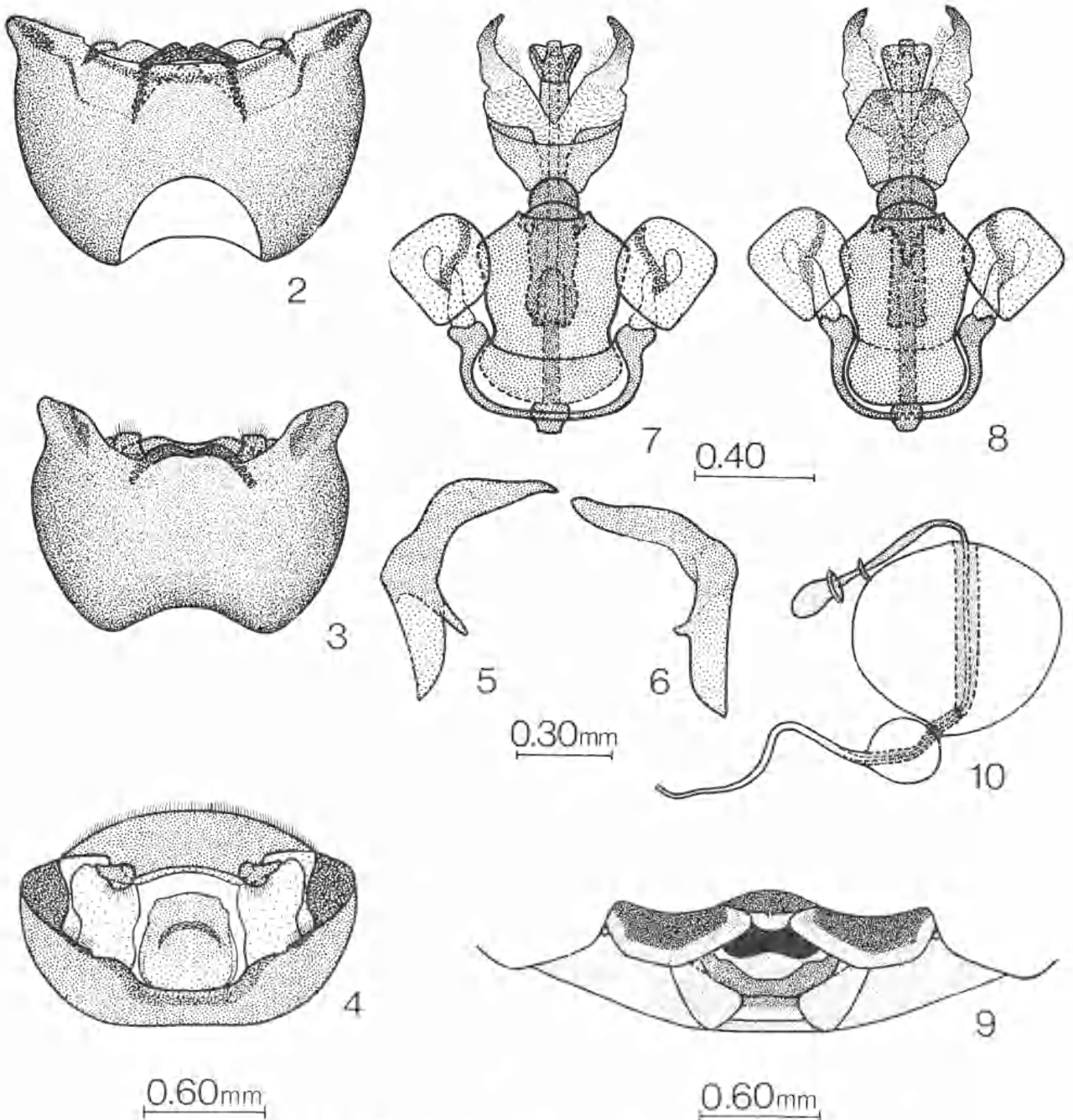
**Thorax:** Metathoracic scent gland ostioles with elongated well developed peritreme and well defined evaporatoria.

**Abdomen:** Strigose vittae present on 2nd, 3rd and 4th abdominal segments.

**Male genitalia:** Pygophore without distinct latero-posterior lobes; parameres F-shaped; inflated aedeagus with vesica distinctly longer than penial lobes and dorsal membranous conjunctival appendage.

**Female genitalia:** Female terminalia with triangulin visible in between 1st gonocoxae, large, rectangular-shaped and reaching to middle of inner margins of 1st gonocoxae; spermatheca with bulb having one long and one short processes.

**Comparative note:** *Knighniella* is isolated in the entire tribe Strachini in the characters of predominantly green and less patterned body, uniformly slender basal antennal segments passing distinctly beyond apex of head, and in the characters of metathoracic scent gland ostioles and male and female genitalia noted under systematic positions.



Figs. 2-10—*Grossiana persignata* (Walker), pygophore: Fig. 2—Dorsal view; Fig. 3—Ventral view; Fig. 4—Horizontal view, paramere; Fig. 5—Dorsal view; Fig. 6—Ventral view, aedeagus; Fig. 7—Dorsal view; Fig. 8—Ventral view; Fig. 9—Female terminalia, ventral view; Fig. 10—Spermatheca, ventral view.

The genus *Knightiella* is named in the honour of Dr. W. J. Knight who is in charge of the Hemiptera Section, British Museum (Natural History) London to recognise his work on Hemiptera.

*Type-species: Stenozygum flavifrons* Distant, 1914.

***Knightiella flavifrons* (Dist.)**

(Figs. 11-21)

*Stenozygum flavifrons* Distant, 1914, p. 375.

*Coloration:* Body green with prominent yellow and light green markings, uniformly punctured

except head (fig. 11); ventrally green with head, thoracic sternum, posterior coxae, lateral margins of propleuron, small outer portion of mesopleuron, posterior margin of metapleuron yellow, 4th and basal portion of 5th labial segments brown, and apex of labium black, portion around ostioles and peritreme white, lateral and a little outer posterior margin of each abdominal segment and broad median portion of 2nd-6th abdominal segments yellow.

*Head:* Anteoocular portion equal to the posterior portion of head including eyes, length of anteoocular portion 0.65 mm (0.65-0.70 mm), length of posterior



portion of head including eyes 0.65 mm (0.65-0.70 mm); width including eyes 1.75 mm (1.75-1.85 mm); interocular distance 0.95 mm (0.95-1.05 mm), interocellar distance 0.60 mm (0.60-0.65 mm); paraclypei with tips separated and subequal to the clypeus; basal antennal segments uniformly slender, straight, distinctly passing the apex of head, 3rd segments slightly longer than  $1\frac{1}{2}$  x the length of 2nd antennal segments; length of segments I, 0.45 mm (0.45-0.50 mm), II, 0.60 mm, III, 1.00 mm, IV, & V. mutilated, labium reaching to 4th abdominal

segment, 1st segment distinctly extending beyond bucculae, latter not reaching to the base of head; length of segments I, 0.95 mm, II, 1.10 mm, III, 0.60 mm, IV, 0.65 mm, labial formula 3<4<1<2.

*Thorax:* Pronotum slightly more than 2.5 x wider than long, length 1.30 mm (1.30-1.40 mm), width 3.40 mm (3.40-3.80 mm); scutellar length about  $1\frac{1}{4}$  x the length of pronotum, scutellar length 2.35 mm (2.35-2.55 mm), width 2.20 mm (2.20-2.40 mm); metathoracic scent gland ostioles (fig. 12) with

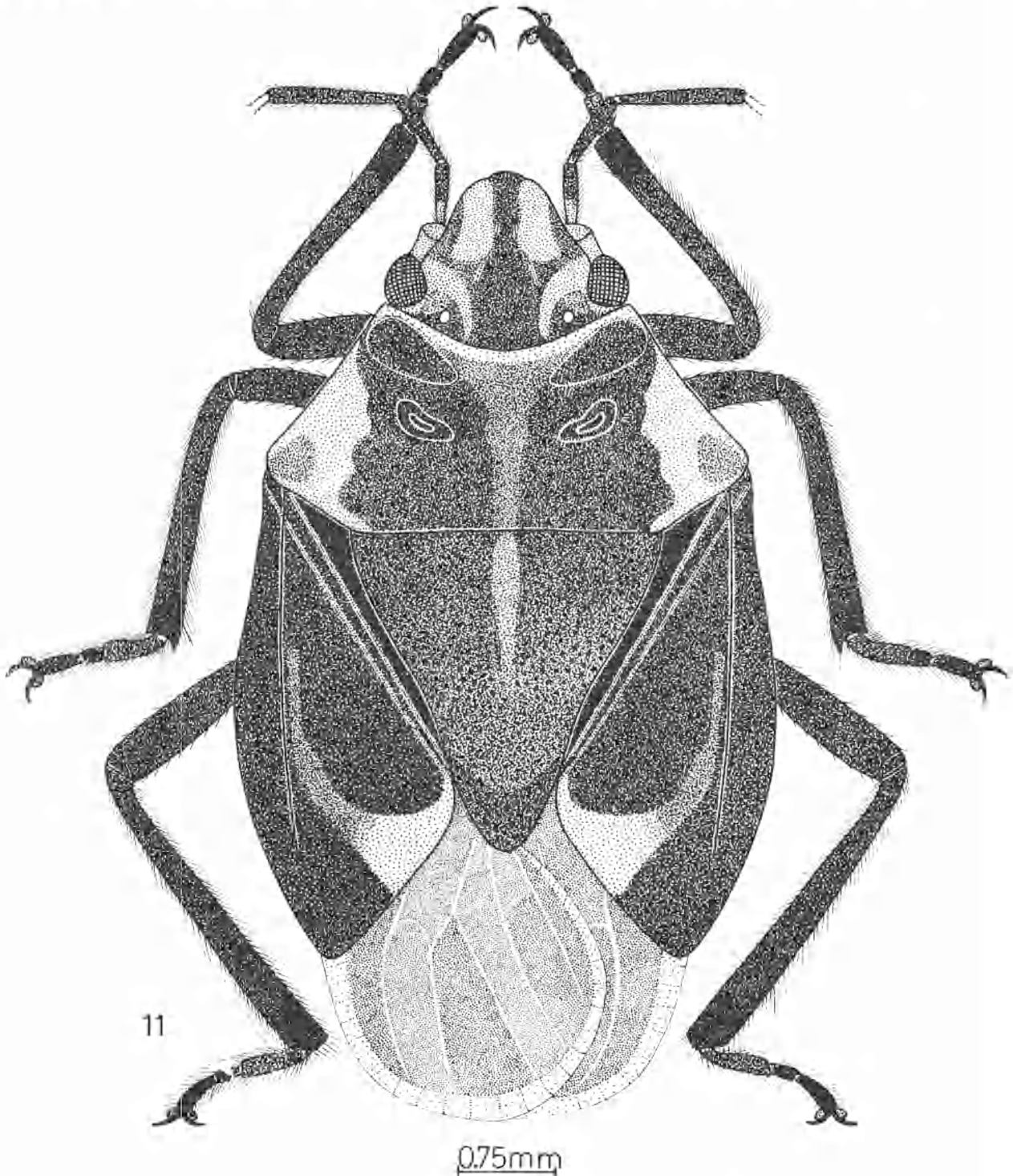


Fig. 11—*Knighitiella flavifrons* (Dist.) male dorsal view.

elongated crescent-shaped peritreme and well defined evaporatoria; distance base of scutellum to apex of clavus 1.60 mm (1.60-1.80 mm); apex of scutellum to apex of clavus 0.75 mm; apex of scutellum to apex of abdomen (including membrane) 2.05 mm (2.05-2.20 mm).

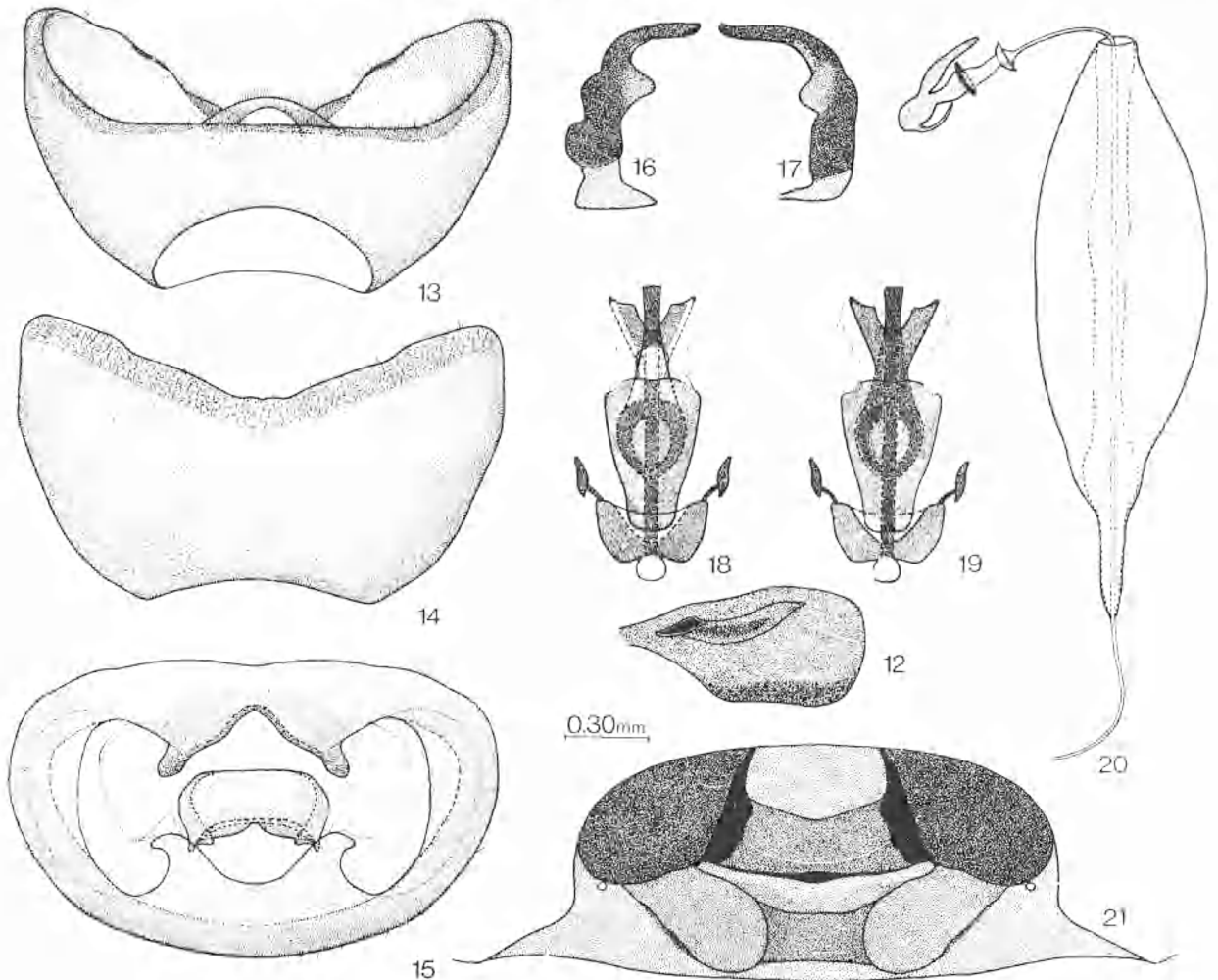
**Abdomen:** Anterior margin of 7th abdominal sternum medially broadly and smoothly convex and posterior margin medially broadly and smoothly concave in male and female; connexiva not exposed. Total length ♂ 7.0 mm, ♀ 7.55 mm.

**Male genitalia:** Pygophore (figs. 13-15) nearly 3x broader than long in middle, ventroposterior margin medially broadly concave with a pair of elongated lobe-like appendages on either side of median concavity (visible in posterior view only); proctiger sclerotized posteriorly and laterally while remaining portion thin and membranous; parameres (figs. 16 and 17) with a short foot-like stem and a long irregularly-shaped blade with outer three bulges, large inner tooth and distal curved part rounded apically, inner tooth and distal part of parameres

imparting a more or less F-shaped appearance to this structure; inflated aedeagus (figs. 18 and 19) with elongated theca tapering posteriorly without distinct lateral thecal appendages, dorsal membranous, conjunctival appendage bilobed, equal to penial lobes, latter fused anteriorly and terminating into truncate apices.

**Female genitalia:** (figs. 20-21) Posterior margin of triangulin with an obtuse angle in middle; exposed part of 1st gonocoxae slightly broader than long; 9th paratergites with apices rounded, with apical angles not touching the posterior margin of 8th paratergites; spermatheca (fig. 21) with elongated median dilation, without any constriction and with uniform distal duct and two processes on the bulb, one thicker and larger as compared to other.

**Material examined:** 2 ♂, 1 ♀ New Caledonia: Ba Bay. 5-VII-19174, P. D. Montague 1918-87 "New Caledonia Exped". *Stenozygum flavifrons* Dist. "C. H. Lyal det. 1977 British Museum (Natural History) London.



Figs. 12-21—*Knightsiella flavifrons* (Dist.): Fig. 12—Metathoracic scent gland ostioles, pygophore; Fig. 13—Dorsal view; Fig. 14—Ventral view; Fig. 15—Horizontal view, paramere; Fig. 16—Dorsal view; Fig. 17—Ventral view; aedeagus; Fig. 18—Dorsal view; Fig. 19—Ventral view; Fig. 20—Female terminalia, ventral view; Fig. 21—Spermatheca, ventral view.

## SYSTEMATIC POSITIONS

The Genus *Knightiella* is not only very different from all the species of the genus *Stenozygum* but is completely isolated in the entire tribe Strachiini Stål, 1876 (*Strachia* group Gross, 1976) on the basis of metathoracic scent gland ostioles with well developed peritreme and completely defined evaporatoria, aedeagus with vesica distinctly longer than penial lobes, parameres F-shaped and spermathecal bulb with processes. It has strigose vittae on II, III and IV abdominal segments laterally similar to those in the members of Mecideini Distant, 1902 and of *Diemenia* group Gross, 1976. The members of the former group are generally elongated and slender having shorter peritreme in the metathoracic scent gland ostioles and have lobe-like short and rounder blade without inner lobe in parameres, aedeagus with elongated and conical lateral conjunctival lobes and the spermatheca is without processes on the bulb. In the latter group the paraclypei generally surpass the clypeus and may be reflexed laterally and often produced into small lobes or processes in front of the eyes, the aedeagus has prominent bilobed conjunctiva with or without additional median and ventral lobes and the vesica is short and robust (Sailer 1952, Abbasi 1974, Gross 1976).

On the other hand F-shaped parameres are found in the species of Carpororini Stål, 1876 (*Carpororis* group Gross, 1976) including the species of *Agonoscelis* Spinola, 1837 for which Stål (1876) formed his division Agonoscelaria and this was also followed by Atkinson (1888). Similarly F-shaped parameres are found in many species of Halyini Stål, 1872 (*Halys* group Gross, 1976) as reported by Ahmad and Abbasi (1974), Abbasi and Ahmad (1975), Gross (1976) and Ahmad and Afzal (in manuscript). Some of the species of *Diemenia* group also have rather blade-shaped parameres which could look vaguely F-shaped (Gross, personal communication). But in none of these groups a combination of characters as listed in the generic description are found. Either it should have its own group within the subfamily Pentatominae or its position remain unascertained until a world wide revision of the subfamily is completed.

On the contrary the genus *Grossiana* certainly belongs to the tribe Strachiini in the characters of metathoracic scent gland ostioles without peritreme and with ill-defined evaporatoria, brilliantly coloured body, somewhat stylate eyes, simple sickle-shaped parameres in the male and bilobed spermathecal median dilation without processes on

the bulk of the females. However *Grossiana* differs remarkably from all the species of the genus *Stenozygum* in the characters of the long, uniformly swollen and slightly inwardly curved basal antennal segment surpassing apex of head (in *S. laetibile* (Walker) the basal antennal segment distinctly surpasses the apex of head but the second is distinctly shorter than the third) and the second antennal segment subequal to third. The latter is also found in the species of *Strachia* but the prominent laterally bilobed pronotum, the simple hook-like parameres, and the medially deeply concave posterior margin of the seventh female abdominal sternum in all the species of *Strachia* (Ahmad & Kamaluddin 1978) clearly separate the two genera.

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